

Ultimate X

Accelerating workflows for media and entertainment

BENEFITS

- Workflow acceleration by leveraging data in-place to improve production workflows and collaboration without moving content
- Substantially faster data transfer speeds (compared to existing methods) accelerating data migration, replication, back-up, and disaster recovery
- Seamless connection of on-prem data to colo, cloud with full control of the data
- Cost savings with minimal copy sprawl which reduces storage requirements and enhances data security
- Dramatically reduced RTO/RPO improving recovery from system failures or data corruption independent of data growth and distance
- Reduced staff training and learning curve with intuitive, web-based management interface

Challenges

Media companies have been facing an industry evolution as content is being created, stored, distributed and ultimately presented to and used by industry professionals and consumers across the globe. The ongoing shift from analog to digital media and the migration of media resolution formats from SD to HD to 4K, even 8K and trends of AR/VR/MR, 360 video have changed core media technologies extensively. Also, a large set of enhanced and advanced digital media tools used at every stage of the content lifecycle such as pre-production, post-production, rendering, and archiving has changed dramatically. The industry evolution requires major changes given the proliferation of distributed workflows associated with this content lifecycle.

In other words, the need to create, distribute and manipulate content regardless of the geographic location has exploded. This presents a significant challenge as the legacy network infrastructure and related processes were not intended to efficiently support geographically distributed, collaborative workflows. When pressed to do so, these legacy systems introduce unwanted delays, latencies and process inefficiencies that were transparent under more localized and manual operating procedures.

The most apparent deficiency introduced is the limited bandwidth allocated to support the geographically distributed workflows, which results in:

- Costly link upgrades to increase the amount of bandwidth available
- Limited ability to do remote processing of time-sensitive content because of the excessive time needed to transfer files over distance
- Limited scalability for the size of the data files that can be accessed remotely
- Multiple remote copy operations for data synchronization between remote locations working on a common file

The Vcinity Solution

Vcinity™ has introduced a unique, integrated solution that effectively addresses the challenges of globally distributed workflows—the Ultimate X™ (ULT X)— which offers workflow acceleration by keeping content in-place or moving it at unprecedented speeds. Deployable as an enabler across a broad range of distributed workflows in financial, healthcare, pharmaceutical and similar applications, the ULT X solution has particular applicability in the media & entertainment arena.

As shown in the “Digital Media Workflows” figure, the ULT X is deployed in each location to establish a global federated data platform for supporting distributed digital media workflows, which include backup, archiving, remote collaboration, satellite upload of event data and remote distribution of archival media. The ULT X accelerates collaboration, production and time-to-value, and enables the assets of these workflows to be predictably distributed to internal customers and consumers.

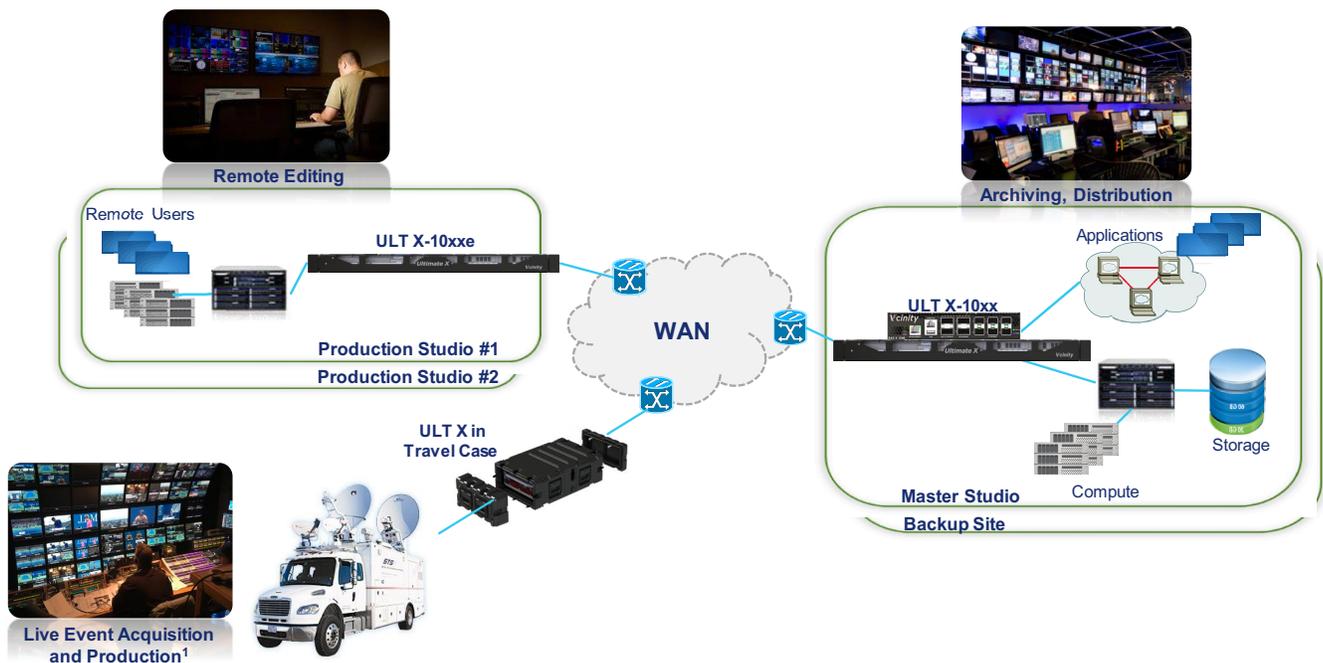
Editing-Remote Collaboration

Media editing is executed by a team of professionals who, although collaborating on a common project, are often working virtually and remotely. Those individuals located closer to the source content might be able to work with the highest resolution version of the content whereas those located remotely, due to bandwidth limitations and distance-dependent data transfer delays, may not be able to access the original content. Instead, these remotely located individuals must work with lower resolution copies of the content. Subsequently, the instructions used to conform the original content to the low resolution content are sent to a location where the high definition content can be edited.

The near real-time, lossless data access/transfer functionality of the ULT X makes the collaboration workflow more efficient, simpler and more productive, saving content producers time and money. Remote professionals can access high resolution source material as if they were accessing the material locally. This reduces or eliminates the need for unnecessary data copies between locations and lets remote users perform and complete a full range of their work processes.

Acquisition-Live Event Media Upload

Mobile broadcast systems used at live events depend on both terrestrial and satellite communication links to deliver the content to a broadcast center or other central location. Provisioning terrestrial communication links on a temporary basis for a mobile facility is costly and often requires a much lower capacity link be deployed to help contain costs. Similarly, satellite links inherently offer limited bandwidth capacity and increasing the amount of bandwidth is a prohibitively expensive proposition. In either case, the mobile broadcast system becomes highly inefficient in its use of available bandwidth and in turn highly inefficient in the time required to transfer data remotely. As a result, significant limitations are



Digital Media Workflows

placed on the types of workflows that can be supported locally from the mobile facility. For instance, live broadcasts of sporting events often make use of multiple cameras that capture the action from different angles and positions. Typically, only a portion of this information is actually used for the live broadcast. At the conclusion of the event the unused captured content must be transferred to a remote archive location or sent to a different remote location for further content editing for future use. In addition, the advent of "at home" production that transports individual camera signals back to the content producer's facility helps production of new events and reduces cost of higher profile events but adds to the existing burden on the mobile facility. Attempting to do this content transfer from the mobile facility using the available inefficient terrestrial or satellite communications infrastructure results in excessive time delays and increased cost, not only for the data processes but also in meeting tight schedules for mobile facility tear-down.

The ULT X solution minimizes the time and resources required by the mobile facility to upload the unused captured content resulting in real savings for the broadcaster. The impact on tear-down schedules is eliminated. Even in the case of many professional sports arenas and other high end news/sports venues with permanently installed high bandwidth connectivity, the improvements in bandwidth utilization are dramatic resulting in ~95% utilization. The end result is the mobile broadcast facility can more effectively and economically handle the workflow demands of live event broadcasts including at-home production.

Editing-Enabling Access to Remote Archival Content

The inherent bandwidth and delay limitations of satellite communication or even terrestrial links adversely impact a mobile broadcasting system's ability to remotely access archival content intended for real-time use to supplement the live event media. This mandates that archival content for use during the live event broadcast must be copied in advance of the event and brought on-site for local editing and insertion into the live broadcasts. It is difficult if not impossible to know what content will be needed so the inability to access select remote archival content in real time is a severe limitation. Another alternative is to transfer the archived material once the mobile facility is set up on-site, but it has real cost implications in terms of labor or staffing multiple shifts to manage the process. Both options result in duplicated content resulting in additional operational expenditures.

The ULT X solution effectively eliminates this restriction by optimizing available bandwidth utilization so appropriate archive material can be accessed as needed, effectively in real time. Personnel located remotely can edit content real time as if they were situated locally in the mobile facility. The advantage of this process is a more extensive and feature-rich set of editing tools available at the remote site for real-time editing.

Distribution-Archival Media

Enabling concurrent, predictable access to large data volumes of centrally stored archival media from geographically distributed remote sites is often a requirement of many sports and news organizations. A challenge in doing this is ensuring a uniform experience for the remote entities regardless of distance or WAN bandwidth connectivity to the central archive. Both of these parameters have an impact on the time required to retrieve the archival data and the amount of data that can be reliably transferred.

The ULT X establishes a highly reliable, lossless connectivity that minimizes the delay impact of distance and optimizes the utilization of the available bandwidth maintaining predictable performance across any distance. This means that unique requirements of each remote site can be more uniformly and economically addressed with a common, replicable ULT X implementation and configuration. Additionally the ULT X does not compress or in any way alter the original content, maintaining the integrity and quality of the source content, which is of paramount importance to broadcasters. In this manner ULT X can enable true monetization of archived media for sports and news organizations.

Business Continuity-Backup

Data backup is integral to ensuring business continuity by protecting against data loss, data corruption and catastrophic events that could interrupt normal business activities. As such, the backup site needs to be located remotely from the site where the content resides. The remote backup challenge for organizations managing, creating and distributing digital media content is Big Data. Recent and ongoing advances and enhancements to media formats, quality and resolution have resulted in exponential increases in the size and number of the associated files that must be transferred remotely to the backup site. With the inherent limitations of existing backup processes and technologies, increases in the amount of content needing to be remotely transferred adversely impacts:

- The amount of time allocated to the backup window, expansion of which could force an extension beyond the typical off-peak backup hours to an extent that impacts productivity during regular business hours
- The amount of bandwidth to accommodate the transfer of the large content datasets
- The speed at which the organization can restore their data from the backup site in case of disaster recovery or to maintain business continuity
- The options available for selecting the most economical distant location for the backup site

Deploying the ULT X solution to support the comprehensive backup workflow will significantly reduce the time it takes to transfer large files over distance, minimize the amount of bandwidth needed for the remote transfer of large datasets, result in faster time to disaster recovery and allow for greater options in selecting placement of the backup site. The results are streamlined

backup processes, improved backup economics and workflow transparency that easily scales as the Big Data gets bigger.

Conclusion

The “Workflow Benefits” table lists workflows specific to media & entertainment and the workflow benefits that may be achieved using the ULT X.

The Vcinity ULT X makes it technologically and economically feasible to leverage existing distributed media workflows more effectively and efficiently and gain the benefit from new distributed workflows not previously deployable. The ULT X offers workflow acceleration with unique set of features and benefits generally applicable to any organization seeking to gain the greatest value from their globally distributed assets, whether within the media/entertainment industry or across a wide range of other industries including financial services, life sciences and government.

Workflow Benefits

Workflow	Benefits
Editing-Remote Collaboration	<ul style="list-style-type: none"> • Creates more efficient, simpler and more productive media workflows • Accesses high resolution source material as if it were local • Reduces or eliminates the need for unnecessary data copies
Acquisition-Live Event Media Upload	<ul style="list-style-type: none"> • Minimizes the time required by mobile facility to upload the unused captured content via terrestrial or satellite • Eliminates adverse impact on mobile facility tear-down schedules • Dramatically improves terrestrial and satellite links on the order of ~95%
Editing-Enabling Access to Remote Archival Content	<ul style="list-style-type: none"> • Eliminates restriction to carry archival content to the site for local editing and insertion • Allows remote access to appropriate archive material in real time • Enables real-time editing by remote personnel with feature-rich set of editing tools as if they were local
Distribution-Archival Media	<ul style="list-style-type: none"> • Minimizes the delay impact of distance allowing concurrent access to digitally archived media assets • Optimizes utilization of available bandwidth • Addresses unique requirements of each remote site uniformly and economically
Business Continuity-Backup	<ul style="list-style-type: none"> • Reduces required time for back-ups • Minimizes bandwidth amount needed for remote transfer of large datasets • Accelerates disaster recovery time • Provides flexibility for selecting a remote back-up site



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